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SOME FISH-NOTES FROM GREAT YARMOUTH AND NEIGHBOURHOOD FOR 1915.

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The Great War has been by no means conducive to an accumulation of my East Coast Fish Notes; on the other hand, it has been most disastrous in its effects upon the fishing industries connected with this and adjacent ports. The Herring fishery had been, up till the commencement of October, practically at a standstill, whilst considerable numbers of fishermen and others connected with this great industry had gone either into the Navy or kindred branches that appertain to it, or had departed into other spheres of labour, not a few going into the Army. A few of my notes will have a somewhat warlike flavour.

During the first week in October some score Scotch boats had arrived to fish from this port, and a few fisher-girls had come south to engage in gutting and pickling operations. Abnormal prices marked the progress of the fishing, varying in degree according to the numbers and qualities landed. Record figures were obtained, which will be mentioned later on. Our shrimping fleet had been much reduced in number of boats, partly owing to the depleted ranks of the men; and those who also remained to dredge for Shrimps, and put in their small trawls for mixed catches, did so under certain restrictions which much hampered them.

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It is just possible that, thanks to a greatly reduced pursuit of them, some species, marketable and otherwise, have numerically benefited by this abnormal close season—certainly two or three species, which will be mentioned later on, visited us more numerously, or at periods when not expected—and it has been remarked that the fewer boats engaged in the Herring fishery have made proportionately greater catches. The quality of the Herrings, to my mind, has been superior; I have never enjoyed such fat and palatable Herrings as have blessed my table during this fateful "voyage."

The shrimpers found themselves restricted in their fishing areas; but catches of "Brown" (Sand) Shrimps were fairly well up to the average. Some grounds annually worked with success were forbidden, others were fished only at intervals, owing to the diverging times of the tides, night-fishing being prohibited. At the well-known "ross" ground (a *Sabella*-covered area) between Gorleston and Lowestoft, where "Pinks" (*Pandalus montagui*) are most abundantly met with, numbers of the Common Prawn (*Palæmon serratus*), of a goodly size, although not so large as taken in the Channel, were somewhat numerously captured—probably the lessened disturbance favoured their visits. Sometimes two or three pints of them were netted by one shrimper on a tide, whereas in past years odd ones only had been caught, and were exhibited in the shrimpers' windows as objects of curiosity.

Having regard to Mr. H. N. Milligan's remarks on his captive crustaceans,* the following facts may be of some interest: "Pink Shrimps" (Æsop Prawn) are hereabouts caught in 7 to 10 fathoms, on rough ground ("ross"). "Browns" (*Crangon vulgaris*), with a small sprinkling of *C. trispinosus*, etc., are sought closer inshore, in 2 to 3 fathoms, the sunnier the weather the better. On an easterly wind, with the water "sheer" (clear transparent green) hauls are poor. A north-westerly wind thickens the water, and if followed by a westerly or south-westerly breeze, catches are greatly increased. Too much nor'-westerly wind sends round "muck" (broken red seaweeds), making hand-sorting slow and laborious. For "Pinks"

*** *Vide* "Hardiness in the Common Prawn, Æsop Prawn, and Shrimp" ('Zoologist,' September, 1915, p. 359).**

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the dredges are down an hour, "if they go clear," *i.e.*, do not foul wreckage, or enclose some unwelcome boulder; these crustaceans mostly die in the nets, none surviving many minutes even if drawn out of the water alive. "Browns" will live all night in a cool place—*e.g.*, in baskets on a cellar floor—and go kicking into the copper next morning. Common Prawns will live for several hours; I examined some late in September that kicked vigorously when handled three hours after coming out of the water, even after they had been buried among the common catch, with layers of the deceased Æsops above them. It is a matter, no doubt, of capacity for living by preference in the more shallow aërated water. Than the "Pink Shrimp," fresh and warm from a Yarmouth copper, no crustacean can be sweeter to the palate, the Harwich and Lowestoft methods of salting and boiling producing an infinitely less tasty dainty.

"Bob" Colly, one of the most entertaining of my shrimper friends, who corroborates the above remarks, tells me that the League Hole, inside the Holm Sands at Corton, near Lowestoft, is the favourite "Pink" ground of the local shrimpers; and that the largest "Browns" are met with off Bacton and Hasbro'. Here also, the nets used being trawls, some good catches of Soles are often made in July.

Towards the end of 1914 young finger-length Grey Mullet were abundant in local waters, the Breydon smelters netting many.

Sea-fish at that time being so scarce, nothing that was edible was rejected; and ridiculously small Skate were brought to market that would at any other time have been esteemed too insignificant for sale. It was fortunate that at the year end and early in January some numbers of small Cod were captured by long-lining, and these for some time were the primest of the fish on sale. On January 1st a well-known Breydoner, "Blue" Calver, who for most months in the year lays pots for Eels, baiting them with Shrimps and Viviparous Blennies that he captures in a small trawl-net, put his trawl-gear into Breydon, and secured on two or three occasions numbers of Flounders, a species in no great local repute. The first lot realised thirty shillings, an hitherto unheard-of figure; and the second, twenty shillings. I recognised the fish, on sight, on a fishmonger's slab, as Breydoners, so many being yellow, brown, and blotched on the under side, a feature due to the irritation of the colour-pigment cells by water and environment not quite so pure as the open sea. They were not plump fish, like the "grass-fed" Flounders taken in August, when feeding on the crustaceans and mollusca haunting the *Ulva* and *Zostera*.

Sprats were still being caught off the Suffolk coast up to January 7th.

January 8th.—A very fine Tadpole-Fish or Lesser Forkbeard (*Raniceps trifurcus*) was captured on a long line, with Cods, off Yarmouth. The ugly head was as large as a hen's egg.

Two fresh and beautiful eggs of the Lesser Spotted Dogfish were brought to me on January 21st, that had been recently swallowed by a John Dory; the tendrils were quite perfect.

"Spraggs" (immature Cod running to 7 lb.) were still fairly common in the fish-shops up to January 27th. Large Herrings from Norway had been lately coming to the fish wharf; and on the same date as above "set" Sprats, lustreless and insipid of taste, were being hawked about the town.

January 29th.—One of the large bombs dropped by a Zeppelin in the town (which I had myself seen in a stable lying in the straw not six feet from a pony!) was taken to sea and exploded by a time-fuse in 12 fathoms of water. It caused a considerable disturbance in the sea, and a 20-lb. Cod, victim to the explosion, floated to the surface—an example of "frightfulness" much appreciated by the boatmen who landed it. On the same date I examined a 2-lb. Plaice, which was somewhat singularly formed; the body was unusually rounded in shape, and the tail, instead of going out straight, turned off at a tangent to one side.

Red Mullet.—In company with some small Dories on a fish-slab I observed to-day (February 2nd) a couple of Mullet, each 5⅝ in. long, which answered to the coloured drawing in Couch's 'British Fishes.' They were whole-coloured—a blood-pinky hue—without any suggestion of the yellow streaks seen in the Surmullet. The heads were not so obtuse as one might have expected. I have never yet seen what I am really satisfied answers to the *Mullus barbatus* of Linnæus, unless these specimens were identical with it. Couch, in saying, "It may happen, perhaps, that the mere circumstance of colour will not prove sufficient to distinguish them," would seem to have had his doubts also.

Half a bushel of Flounders were lying on a fishmonger's slab to-day (February 23rd); the largest of them would easily have been covered by a longitudinal slice of lemon. I was assured that they were on sale for the cats, but the locality was against this suggestion.

March 4th.—I weighed an East Coast Herring at 12 oz., a rather large one, although many of the Norwegian "grandfathers" of the shoals exceed that weight.

March 8th.—Saw a Smeared Dab (*Pleuronectes microcephalus*), about 1½ lb. in weight, with the whole underside, save the head, of the same colour as the upper surface. Colour-variation is by no means common in this species.

LARGE HERRINGS.—I examined a number of Norway Herrings in a little fish-shop to-day (March 21st), which ran fairly large. Several were 13 in. in length, and 7 in. round them at the deepest part. An example in another shop, said to have come from Scotland, weighed ¾ lb.

The late Mr. de Caux, in his book on 'The Herring,' refers to his largest example as 15½ in. A Yarmouth "'Longshore" (a term expressive of its local nearness of capture) runs to 10 and 11 in., with a weight of from 4 oz. to 6 oz. I have weighed a 14-in. Herring at 14 oz.; and Mr. R. Beazor assures me he had a 16-in. fish, turning the scale at 16 oz. I weighed one on December 5th, 1900, that for a length of 15½ in., with a girth of 7½ in., scaled 14½ oz.; and yet another on December 17th, 1895, at 14½ oz., that was ½ in. less round and the same in length, a slightly heavier roe undoubtedly making the difference.

It seems to me rather curious that a milt (male) Herring takes the salt less intensely than a roe. The majority of local persons buying a red (smoked) Herring ask for a "hard roe"; I myself much prefer a "soft-roed 'un" (*i. e.*, a male fish), as being of a milder and much superior flavour.

COMBER WRASS (*Labrus comber*, Ray.).—Two examples of a Wrass, corresponding intimately with the coloured figure given by Couch ('British Fishes,' vol. iii, Plate CXXVI), were captured in a shrimp-net on March 31st off the town. One measured 2½ in. in length—a bright, well-marked fish, with a series of silvery-white dashes and dots running from gill-covers to tail, on either side, on a basal colouring of rich mahogany red. Belly paler, inclining to yellow. The back was dotted with brown at the base of the fin-rays. Fins much the same hue as the body, and the iris was crimson. The colours faded rapidly. The description as given to Couch, from the west of Cornwall, by fishermen of Mount's Bay, was to the effect that it was "the most slender and graceful of the Wrasses--the head smaller, lips thinner, jaws more lengthened and pointed." But he admitted that he had not yet examined a specimen.* Pennant mentions an example received from Cornwall, and describes it much in the same terms, giving a very respectable engraving of it, from which, I should imagine, Yarrell ('British Fishes,' vol. i, p. 489) had his woodcut copied, although reversed.

Mr. R. Q. Couch, writing to the 'Zoologist,' states he had seen but one specimen, but that Cornish fishermen mentioned that "several are caught every summer."

My second example was 2¾ in. long, but of a much darker hue.

Day ('British Fishes,' vol. i, p. 253) vaguely deals with the Comber, and classes it with the *varieties* of *Labrus maculatus.* Probably he had not seen it.

If *Labrus comber* be a true species, it is an interesting addition to my list of East Coast fishes.

On April 10th the 'Angler's News' provided its readers with a list of "specimen fish" taken in British fresh waters in 1914. Among them the following local captures are worthy of note:

Pike	January	Weight 24 lb.	Oulton Broad.
Pike	February	Weight 23 lb., length 40½ in.	Barton Broad.
Pike	March	Weight 20 lb. 8 oz.	Barton Broad.
Perch	August	Weight 2 lb. 12 oz.	Hickling Broad.
Chub	July	Weight 6 lb.	Little Ouse, Brandon.
Bream	August	Weight 6 lb. 4 oz.	Waveney, Somerleyton.
Bream	October	Weight 5 lb. 13 oz. (Worm-legering.)	Bare (Norfolk).
Roach	October	Weight 1 lb. 15¼ oz.	Waveney, Beccles.

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* Yarrell, however, remarks that Couch "has also met with this fish."

The summer Mackerel-fishing was a poor one. Mackerel were scarce and dear. A 'longshore boat in May made one catch, numbering 2500 fish, that realised £26. The spring Herring fishing was not of much account, no drifters going to sea; only a few 'longshore boats ventured out and made small catches. The Herrings, small and tasty, sold as bloaters as high as threepence *each*, a hitherto unheard-of price.

On *June* 28*th* I received a note from Mr. R. Beazor, saying: "I have got a fine albino Brill and a hybrid Brill and Butt [Turbot] (one of two that I had) if you would like to see them. 'German caught.'—Yours, etc., ——."

It would appear that a British submarine had captured a German smack "somewhere in the North Sea," and our tars, for some reason which I am not quite sure of, made the vessel tow our own undersea craft into port (!). The catch of fish, which included some fine Turbots and a number of particularly good-conditioned Haddocks (probably taken well to the eastward) realised £100 on the fish wharf. I saw among the catch two hybrid Turbot-Brill, weighing, perhaps, 3½ to 4 lb. each. One fish was Turbot-shaped, with the almost normal upper Turbot colouring; a few splashy white spots, and an immense number of small, blunt, ill-defined knobs (answering somewhat to the spiny excrescences on the skin of a normal Turbot) were sprinkled over the upper surface. These numbered, in fact, six times the usual quantity found on the true Turbot. The under surface was white, but curiously freckled with lozenge-shaped "impressions."

The other fish was practically an albino. Almost the entire upper surface was white, smooth, and glassy to the touch. A few tiny dots of brown, and one blotch the size of a half-crown, only broke the uniform whiteness, and a small figure-8-shaped patch of grey formed a curious setting for the eyes. The dorsal fin started abruptly some inches behind the head; but on the head itself, just behind the eyes, a tuft of fin-rays, like a rough small paint-brush, made a grotesque suggestion of eyebrows (!).

July 14*th*.—Note: "Some of the shrimpers are getting nice lots of Soles. At Sheringham the fishermen are catching quantities, using lugworm as bait."

I had sent me on June 25th a small fish from Wendling, near

East Dereham, for identification. A letter accompanying it stated that, in a pond in which only Tench were known to exist, most unexpectedly scores of small fishes on a warm, sunny day came to the surface, some as large as a Herring among them. They would not take a bait, but one was captured in a bow-net and forwarded to me. The fish was a Prussian Carp (*Carassius gibelio*) 5 in. long. It was identical with those found for many years past in a roadside pond at Lound, a half-dozen miles from Yarmouth, but not of quite so golden a hue. Dr. Day, with his usual eagerness for discarding species, describes this fish as a *variety* of the Crucian Carp. As I had suspected, my friend informed me that the Wendling pond was "very thick" and weeded at times, and used by horses and cattle. Knowing the conditions at Lound, my friend's remark that "these Germans take a lot of killing" was very much to the point."

Pilot Fish.—A very fine 11½-in. example of the Pilot Fish (*Naucrates ductor*) sent me on July 17th from Milford Haven for identification. It had been captured forty miles west of St. Anne's Head, Pembrokeshire, and had aroused much curosity among the fishing population. The fish was very Mackerel-like in shape: the ground-colour was a greenish-blue, with fine bluish-black bands, each ½ in. wide, encircling the body, which gave it, at a first glance, a curious appearance of having been regularly tied with black tape. The fish had been taken amongst a school of Scads. I sent it to Mr. Roberts, of Norwich, for preservation for our local Tolhouse Museum.

Perch (*Perca fluviatilis*).—A number of fishing-boats (steam-drifters) were sent up the rivers after the 1914 fishing to be out of the way of the harbour traffic. Some went up the Yare from Yarmouth, and a number of Lowestoft boats went through into Oulton Broad; a few were moored at St. Olaves, opposite the cutting wherein lay my summer house-boat. The bottoms became weeded, attracting numbers of Shrimps and young fishes—Roach, Smelts, etc.—which no doubt found small crustaceans there among. To these also came numbers of Perch. At Oulton an angler, drawing to the side of an Oulton vessel, threw in his line while holding his umbrella, and to his surprise the float disappeared the moment it reached the weeds. He repeated the throw, and in the end had made a respectable bag. Others followed suit. At St. Olaves a young Territorial, fishing with a stick and short line, by way of experiment dropped his bait—a boiled Shrimp—near the bow of a fishing-boat, and immediately hooked a Perch, successive captures running larger until he secured a pound-weight fish. On August 2nd I found they eagerly seized Shrimps; placing my bait a foot below the float, I allowed the tide to take it along, and at the end of each swim brought a Perch to hook. I noticed these fish most eagerly pursuing young 1½-in. Smelts and Roach of a similar length.

I observed that the Perch were very faintly barred on their sides, and, when dry, these bars had entirely vanished. Their contact with the salt tides seemed to give them a very palatable flavour, and none were wasted. Opened along the back, like a kipper, rubbed with salt, and hung up to dry for an hour, they came, still in their jackets, from the fry-pan as deliciously flavoured as a Trout. Lubbock ('Fauna of Norfolk') refers to the Waveney Perch as delighting to come up ~~as~~ far as the "salts" to prey on Shrimps.

August 9th.—To-night the water pouring up river to Breydon was unusually bright with phosphorescence. Every tiny wind-puff edged the wavelets with silvery gleaming; my punt's prow cut a widening angle of fire as it divided the stream, and even my mooring ropes clove the surface into wavy lines of brightness. I thrust my eel-rod into the depths, which glowed luminously a fathom below the surface. It was an ideal time for the Smelts, which jumped out of the stream, making big splashy circles of brilliancy as they captured, or missed, some playful little "Whitebait," that was itself out for prey still smaller.

During August I had a fairly good spell of eel-catching; on Breydon by eel-spear and "bab," and on the Waveney by the latter only. The eel-spear is gone much out of use since Breydon has so deteriorated. In the sixties quite a score Breydoners looked upon Eels as their principal catch—by spearing in deep waters in winter, and by babbing on the flood-tide in the finer months, using the spear when working the flooded flats; on a four- to six-foot staff when the tide was up. On one occasion a "bed" of Eels was discovered in the "Fleet," when quite a rush was made, some men, while it lasted, earning as much as ten shillings in a day. Only a few amateurs now go up for a "mess" of Eels, working hard to get it*; whilst only two or three semi-amateurs more seriously "bab" for sale. As I have elsewhere stated, the old Breydoners of my younger days are dead. "Short'un" Page, "the last of the Mohicans," at the moment of writing aged and decrepit, is spending the late winter of his days in the infirmary.

A few observations on Eels made during my summer holidays may be briefly summarised: When feeding, Eels refuse but little that comes in their way. One vomited in my eel-trunk a piece of raw beef; another, measuring 15 in. and showing a distended abdomen, on opening it it was found to contain a 4-in. length of bacon-rind, making the stomach in shape like a tennis-racket. An aged Breydoner told me that when babbing near the Haven bridge he broke his pipe and threw in the pieces. He noticed soon after one Eel with a lumpy appearance, and curiosity tempted him to skin it. From the stomach he took out a part of the pipe-shank. To skin an Eel with least trouble the tail must be struck against a hard substance. No matter how lively an Eel may be, the moment the vertebræ near the head are severed it hangs limp as a dead worm. Eels die quickly in crowded eel-boxes, undoubtedly of asphyxiation, and eel-catchers are always eager to send off their fish as soon as possible after capture; yet they will take little harm from sewage water, although the slightest admixture of tar, petrol, or pungent oils sends them away in a great hurry. I was catching Eels on one occasion when a piece of greasy cotton-waste touched the "bab"; not another bite did I get. Stale worms, unless they are very hungry, will not tempt them, so that fresh worms are necessary nightly. A "bab" is a 2- or 3-yd. chain of threaded worms, wound in coils around the hand, then tied and weighted with a conical-shaped leaden sinker. Eels are fickle: one evening they will bite freely on one side of the river, on the next they are found on the opposite only. It is a good plan to try several places until they are found. On the river they bite better on the early flood than at any other time of it. Eels will "mud" in the marsh ditches when drought stagnates, and the water is low; a "let in" of fresh water from the river through the sluices enlivens them at once, as those who use the "lamb-net" are well aware.

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* Eel-picking is now confined to the Main Channel, which is over 20 ft. deep, or in summer, with the babbing, chiefly confined to the shallower "drains" or creeks that drain the ebbing waters from the now much-raised and hardened acres of mud-flats.

Scad.—During the latter part of August quite an unexpected invasion of "Horse-mackerel" (Scads, *Trachurus trachurus*) came to the shallow waters. I saw a 50-lb. catch, taken by a lad before breakfast on the morning of the 20th; some of them scaled 1¾ lb. For a few days excellent sport was enjoyed by those who cast angle from Britannia Pier; the fish bit fast and furiously, not rejecting a bright, naked hook. On one occasion a soldier, home for a rest from the Front, secured no less than 140 fish.

It is rather curious that small shoals of only very juvenile Bass should occasionally visit this neighbourhood; these are seldom more than a span long each, whilst a few miles down the Suffolk coast, more particularly at Aldeburgh, they are habitually larger and abundant. The 'Angler's News' of September 25th records: "Large hauls of Bass at the harbour-mouth (Aldeburgh) by means of draw-nets. One was hooked from the south beach weighing 12 lb. 2 oz. It took a small Whiting, and gave the angler a 200 yards' run!"

Two fine, full, 'longshore Herrings were taken in a smelt-net on Breydon during the first week in October; their advent here is a very rare occurrence.

October 18th.—I had noticed Dog-fish (Tope and Piked Dog) lying in a heap on board the fishing-boats, and find that a ready sale exists for them nowadays, their skinned carcases being sold as "Flake." On several occasions I have wandered by the tide-mark and among the byeways in the neighbourhood of the fish wharf, finding it a rare thing now to see a Dog-fish thrown away. On this date I called in at the back premises of a leading fishmonger, and found three hands busily at work skinning a trunk of Dog-fishes. Some had been netted in an oily area, and their skins were black with the sticky liquid; this, however, mattered little, for with a few dexterous movements their jackets were drawn off, and a headless and now tempting-looking carcase was ready for a purchaser's attentions.

Flounders.—On November 6th I went up Breydon on the low ebb-tide, taking my eel-spear and butt-dart, the latter very much like a rake with six barbed spikes running vertically with the 10-ft. shaft. As the tide falls the Flounders, which may have been scudding around and among the *Zostera*, scutter down into the runs, and as these run dry those which do not "ground" get into the larger drains that do not altogether empty of water. The Flounders search for Shrimps, Gobies, and other small prey among the weeds that collect in eddies, or on the rougher shelly grounds that scrunch audibly under the stabbing dart, as the tines pierce the layer of empty clam-shells. The fish, as the tide returns, gather in the vicinity of the mouths of the runs, waiting for greater depths in which they may roam and feed when the flood-tide makes.

I secured 70 Flounders, some up to 10 in. in length, thick and well-fleshed, not a few from 8 in. upwards being big in roe. Fifty-four were right-handed fish, and 16 were left-handed, or reversed. The difference is quickly apparent when one is beheading the fish, as a left-handed example makes a different handling of it necessary. Most were very dark brown on the upper side, and several blotched and coloured on the under surface. Two only, fresh from the sea, had not yet darkened the yellowish-brown hue habitual when living in a sandy habitat. One only was afflicted with parasitic growth, and this was confined to the pectoral and anal fins. It corresponded with what Dr. Lowe described in his Norfolk Fish List (Victorian History) as a "skin disease resembling epithelioma—large fungous growths cropping out all over the body. The granulations large and roe-like—under the microscope, consisting of large nucleated cells."

Inspector Donnison's half-yearly Reports on the Eastern Sea Fisheries are as usual interesting, although not so bright as on the early days before the war. The Norfolk Mussel industry, as usual, looms up largely in its details. When some 3000 cwt. are sent away in a couple of months (December, 1914, to January, 1915) from the north-western corner of the county, one may imagine that the industry is not a small one. The Inspector mentions that "a large quantity went by railway and steamer to the wholesale merchants at Hull, taking the place of the Dutch Mussels usually imported there." In the half-year Report, ending September 30th, he states that "the quantity of Mussels taken from the beds and layings in the Boston (Lincs.)

and Lynn Fisheries during the previous season was 87,500 cwt.—verily a little harvest of the sea!

Mr. Donnison's opinion that, owing to the great restrictions placed on the steam-trawlers, who on ordinary occasions follow the spawning fishes "until the territorial limit is reached," there should be more fish migrating thither, accords with my own. He refers to a "Cod different to the Cod generally caught," coming to the East Coast at the end of 1914, which "had dark skins and small heads, were very plump, and went up to 29 lb. in weight." A crew of long-liners received over £60 for catches obtained in five days' fishing. By January 23rd the fish had all disappeared.

Young Codlings were brought in pretty freely on the Norfolk coast in November; on the 12th they were numerous in local fish-shops. I have kept an eye upon them with a view to verifying Mr. Donnison's note on the smaller-headed fish, but so far have not satisfactorily done so. Codlings ran larger at November end, a few up to 11 lb. (the largest) were hooked off the Jetty. A sea-angler, fishing from the Britannia Pier, hooked a large Cod, which broke away, taking trace and lead with it. Thus encumbered, the unhappy fish soon became wearied out and "blown," and the lead detached, a roughish sea tumbling it ashore, when the hook, still fixed in its jaw, was identified as the lost one. Fish weighed 22 lb.

The Whitings were few, and no remarkable catches were recorded; probably the prevalence of so much easterly wind may account for their scarcity.

In the September Report mention is made of Dog-fish becoming a well-established marketable food. Hitherto those taken have been used for bait. Trawling for "Pink Shrimps" (Æsop Prawn) had been very remunerative, one crew's earnings averaging £7 a week. "Occasionally 70 pecks were obtained by a vessel in a day." It is interesting to note that horses are employed around the Wash to drag nets. Crabs landed up to September 30th approximately numbered 940,000, and Lobsters 29,050. "These totals were below those of the six seasons (1909–14), the highest in Crabs being 1,250,000, and in Lobsters 48,100."

Starfish (*Uraster rubens*) of large size "raided" the Lynn waters; and "small Starfish . . . did much mischief to the brood Mussels"; many of these "in extreme diameter were between the size of a threepenny and a sixpenny piece," and by the Inspector's measurements and calculations would require considerably over 4,000,000 to weigh a ton. "Small as the Starfish are, up to two and two and a half tons have been taken in a day. Starfish are fond of Cockles. I have observed a large one devouring a Cockle and holding over a score others on the suckers of its five arms or feet."

I cannot dismiss these entertaining Reports without referring to the notes on the Lugworm. Since sea-angling has become so popular, huge quantities are obtained for the tackle-shopkeepers, who retail them at about tenpence a hundred, keeping them in drawers, something like fruit-trays, in a rack, the worms being spread on sacking wetted with salt water. They die rather quickly, so that, owing to the vagaries of the weather, the business is a somewhat precarious one. Some forty men in the neighbourhood of Wells alone are engaged wholly or partly in digging for them. Many of the worms are used for long lining in the immediate neighbourhood. The men, roughly speaking, average 1200 worms apiece; "one," says the inspector, "had obtained 2000 worms in a tide"—*i. e.*, on the ebb, which uncovers the low-lying sands for a remarkable distance. "Worming" and "cockling" are pursuits at variance, and, it is evident, to the detriment of the last-named industry.

With regard to the Sprat-fishing at Southwold, Mr. Ernest E. Cooper wrote me on December 4th: "I regret to say that up to date our Sprat-fishing has been a failure. None were caught in October; a few were caught during the first ten days in November, but the weather was stormy, and on the 9th one of our men and his son lost their lives through their boat being swamped. Then the wind set in from the east and north—gales, frost, and snow—and the Sprats disappeared. This week the wind came southerly again, and when the sea moderated the boats got a few Sprats; yesterday about 150 bushels were landed at the Harbour, and if the weather keeps fine and open the men may still make a short fishing. In addition to the weather they are hampered by the military restrictions, only being allowed to be off during daylight. [Night is best for Sprat-fishing.] The majority of our fishermen are on war service in some form or other, and practically all the young men have gone."

Mr. Cooper mentions the capture of four five-bearded Rockling (*Motella mustela*) by rod; this species has been somewhat frequently hooked of late. "A female Gemmeous Dragonet or Skulpin (*Callionymus lyra*) and several Unctuous Suckers (*Liparis vulgaris*) in the fish-trawls." Sand Dabs (*Pleuronectes limanda*) were numerous in the Bay during the summer months. He describes the early winter sea-angling for Whitings and Codlings as "very poor, and no big fish."

Large Bream.—A large Bream (*Abramis brama*) was caught in the Wensum, four miles from Norwich, on December 5th, and was exhibited in Mr. R. Marsham's tackle-shop window, in the city, by whom it was afterwards sent to the Fish Department of the British (Natural History) Museum. Mr. C. Tate Regan, on an examination of the scales, suggested its age at about fifteen years. A well-known angling expert describes the fish as "a perfect dream." The fish, which had succumbed to the wiles of a paste bait, weighed 7 lb. 14½ oz. Lubbock ('Fauna of Norfolk') described a Bream of 5 lb. as "a very large one." An example was recorded by the late Mr. J. H. Gurney, senr., taken at Cossey, near Norwich, many years ago, as weighing 7 lb. 1 oz., with a length of 25½ in.; depth, 8½ in. The late Dr. Norman, in the seventies, caught one weighing 8 lb. 12 oz.; and the late Dr. John Lowe (Norfolk Nats'. 'Trans.,' 1884) records a Bream of 11½ lb. taken at Beeston Regis on June 17th, 1879, and another at Thorpe, near Norwich, on the 23rd, weighing 8¾ lb. It is probable this last is identical with that taken by Dr. Norman, but I have not been able to verify this opinion, although Dr. Day ('British Fishes') suggests it. The 11½ pounder was estimated by Day to be twenty-six years old, but Seeley ('British Fresh Water Fishes') places it at fifty years.

Writing to me on February 7th Dr. Laver, of Colchester, thus refers to Sprats used as manure: "Sprats always interest me, even when sold for manure. . . . It was the custom for our [Essex] stow-boat men to go out and stay until they got a large number, the small quantity not paying at the low price they fetched. Of course, the first caught became bad, and were fit for nothing but manure. After prices went up it paid to come in with the few, with the result they go to market or to the picklers, who send them to Norway, etc." In a subsequent letter Dr. Laver, speaking of the catching of Eels, as pursued in his vicinity, wrote: "With reference to Eels, did you ever notice how much nicer they are when caught in the sea than those caught in fresh-water ditches?* In this district there are several boats constantly engaged in the trawling on the *Zostera*-covered shores for Eels. I have never seen this sort of trawling employed elsewhere. It pays at times very well, I think, as I have often seen them turn out of the net some thirty or more pounds at a haul. At a good high tide a haul through Breydon would produce a lot." †

Among the few interesting crustaceans I have met with this year I may mention two Edible Crabs (*Cancer pagurus*): one on May 18th, which had an extra point depending at a right angle from the fixed chela, on the right-hand; and another on July 20th, that on the left-hand claw had an extra point on the free chela, the point that met the fixed chela having a bifurcated end.

On August 17th Mr. Edward Peake sent me from Trimingham, on the Norfolk coast, a very beautiful specimen of the Velvet Fiddler Crab (*Portunus puber*) that had been taken by a local fisherman, and which I afterwards presented to the Norwich

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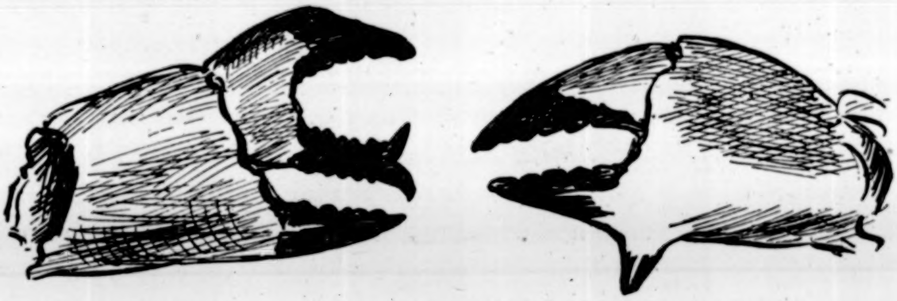
* It is here a generally accepted fact that "running" Eels, known also as "silver bellies," are of a far less muddy and "fulsome" flavour than those fat, ruddy-bellied fish netted in marsh ditches and stagnant waters.

† I do not think this would be the case, as those two or three who trawl for bait on Breydon catch but very few, and the draw-nets only occasionally bring in two and three fair-sized Eels, among the Smelts, on a single tide. Some years ago, however, a German named Hausemann, a quaint character, endeavoured to introduce one variety of German "kultur" on local waters by eel-trawling, towing his net behind a dilapidated little steam-launch, which cost him £80, and another £20 in tinkering it up. Each haul accounted for a half to three quarters of a stone—a payable quantity on occasion. I have dealt more largely with this character in 'Man and Nature in Tidal Waters,' pp. 208–210. I venture only to add that one night a wooden plug, stuck in a weak spot in the boiler, was shot out when the pressure of steam suddenly went up to 120 lb. (80 lb. being a dangerous figure), scaring the fellow almost out of his wits. This, after he had told his man, "Damme! I can do surely vat I likes mit mine own poat!" He next invented iron eel-pots that had originated in his distorted brain; these, when tried, became buried in the mud, and very soon covered with silt and ooze.

Museum. I first noticed the species for the county in August, 1910, when three were obtained near Yarmouth by a shrimper.

A half-grown male Fiddler Crab was taken with a catch of "Pink Shrimps" on December 4th, and came into my hands. The Æsop Prawns in this catch amounted to two, perhaps three pecks, which seems to suggest this species may be found in some quantities all the year round near the shore.



ABNORMAL CRAB-PINCERS.

The 1915 Herring fishing began in a small way at the beginning of October; fifteen drifters came in with some fish on October 5th, five crans being the top catch, which made 82*s*. per cran. The Herrings were reported as "not large, but of nice quality." On the 9th a steam-drifter put into Lowestoft with two crans of Herrings that made £5 14*s*. per cran, equivalent to £57 per last—a huge price when compared with £2 10*s*. per last (13,200 fish), a price frequently made during a glut. At Lowestoft, on the 18th, the Yarmouth boat 'Try' landed 150 crans, which realised £400. The busiest day of the season was on October 23rd, when over 100 boats came in with catches estimated to be worth £20,000.

The following paragraph, cut from the 'Eastern Daily Press' of November 1st, thus records a remarkable catch, and the largest of the season:

"HAUL OF 280,000 HERRINGS.

"The outstanding feature of the Herring Market on Saturday was the arrival of the Banff boat 'Benison' with a catch to beat all records. The 'Benison' (a most appropriate name) berthed at the new quay in the afternoon and presented a wonderful spectacle, every space on deck gleaming with silvery Herrings. Her skipper estimated his catch at 280 crans, equal to 280,000 Herrings, and this is the heaviest haul of which we have ever heard. There have been several big shots this season, but the biggest hitherto had been 220 crans. The 'Benison' took her enormous catch from sixty-seven nets and had to let four nets go. This is a remarkable take from such a number of nets, as all fishermen will recognise. The entire catch was sold to one buyer at a price that worked out at nearly £600. The 'Benison' is a sailing-boat, which makes the big haul the more wonderful, but she had been fitted with a paraffin motor."

The last remark, with regard to the additional "motive" power, applies pretty well to all the Scotch sailing-craft fishing from the port. This addition makes them independent of wind and tide, and steam-tugs, adding at a comparatively small outlay to the catching power of the individual vessel, as well as an improved quality to the catches.

Rough weather broke into the fishing at the height of the season, so that the boats were often kept in harbour when they otherwise would have been at work; however, the majority of the catches sold at remarkably high prices, and many boats made a most remarkable voyage. The heavy gale of the 13th, coming suddenly on the fishing-grounds, played havoc with nets, some of the boats losing several. Only three boats brought in fish; one, the Peterhead drifter 'Grateful,' had fifty crans of fish, which sold as high as £6 11*s*. per cran. Ten crans are equal to a "last."

The queerest catch of all was reported to me by a fisherman, "in the know," that "somewhere" in the North Sea, when the nets were hauled by his drifter, up came a German submarine with them covered with "lint" (nets). It is perhaps needless to state, he assured me, that the naval authorities . . . since which that particular cetacean-like intruder has troubled us no more!

The following statistics briefly summarise the fishing for the past three years:

1915.

Boats fishing out of Yarmouth . .	185 drifters.
Number of crans landed . . .	120,122 crans.

1914.

Boats fishing out of Yarmouth	370 drifters.
Number of crans landed	177,459 crans.

1913 (Record Year).

Boats fishing out of Yarmouth	999 drifters.
Number of crans landed	824,213 crans.

The statistics for Lowestoft may be liberally estimated at nearly two-thirds those of Yarmouth.

A few other items may be worth noting: 1915 saw the smallest fleet fishing out of this port for many years, but the sales of Herrings have made the highest prices ever recorded. The biggest price reached was for a moderate catch, which went at 146*s*. per cran. Last year there were occasions when "over days" went for as low as 10*s*. per cran; none went this year below 40*s*., and this was rare.

The boats plying were of the older type of steam-drifters, the pick of the fleets having been taken by the naval authorities for mine-sweeping, etc. The same remark might almost apply to the fisherfolk! The majority of the catches have been consumed in the Homeland, although the Scotch curers "developed a market in the United States, and local merchants cultivated a trade with France" (from report in 'Eastern Daily Press'). Some of the motor Scotch vessels earned up to £2000 for two months' work, and the larger steamboats made remarkable earnings, in one recorded instance as much as £4300. No boat's fishing proved a failure; the fish were plentiful, and the grounds less crowded with nets. One Scotch boat earned £2400 in eleven days. A boat bought for £650 on purpose for this fishing made £700 in one week.

In ordinary seasons some 200 steamers come hither to load "pickles" for the Continent; this year they were entirely absent, a few small coasting steamers taking what was exported to other ports, for transhipment. The reduced number of Scotch and other buyers, herring-girls, coopers, carters, etc., from North Britain naturally affected the income of the port and town to a very serious extent.

Not the least interesting feature connected with a "fisherman's fishing"—*i. e.*, a remunerative one for the catchers—is its effect upon the domestic issues, the numbers of those marrying on Christmas morning at the Parish Church, and elsewhere, being much larger than during indifferent seasons. The ancient Yarmouthian axiom that "Of all the fishes in the sea—Herring is king," still holds good in many ways.

December 20th.—A fine roach was caught on the Wensum, near Norwich, on the 19th by Mr. T. Tubby. Weight 2 lb. 7½ oz., length 15 in., girth 12½ in. Our largest Norfolk roach on record is one of 3 lb., with a length of 17 in. and girth of 12½ in. It was caught at Ranworth Broad, on the Bure, on July 31st, 1883.

Mr. Thos. C. Rising, writing to me from Lowestoft on December 22nd, states that "extraordinary shoals of Herring-fry inshored in August, off the town. It was very interesting to watch the small emerald-green Garfish shooting into the midst of a bunch, and seeing the open space they were given instantly; small Eels were also busy in such a feast of plenty. I have also noticed . . . a flock of large Gulls that have been living in some fish-working premises quite in the midst of the town. They stand in a row upon the ridges, and at times fly in circles, and seem to have copied the evolutions of the pigeons. A shortage of fish-offal makes them sharp-set. There are more in the district than ever I saw before." In the neighbourhood of Yarmouth the big Gulls which mustered up so numerously in October had become much scarcer by the end of the fishing. The habit of perching on ridge-tiles, although of long usage in Scotch fishing-centres, is quite a new feature in Yarmouth, having started during the 1914 Herring-scarcity period. The clean-plumaged Black-headed Gull now habitually haunts the filthy outlets of the town sewers.

Mr. Robert Beazor, fish merchant, writes December 24th, complaining that "rare specimens" were notoriously scarce on the fish-wharf during the 1915 fishing, but truly remarks that "this (smaller) fishing and the dreadful war have taught us all a great lesson, for fish which at one time were much despised were now found by all classes of the people, and came to be appreciated by them, as splendid and wholesome food. I must mention two species there were here almost wholly neglected hitherto: First, the widely distributed and abundant 'Dog-fish' (generic for the family). Until the scarcity of food was felt it was despised, and I have seen tons of them sent to the manure manufacturers. The last year or two fishermen have brought them to the market, where they have been readily disposed of at remunerative prices, and have been bought both by hawker and fishmonger. The antipathy hitherto shown by the public in purchasing this fish led the sellers to call it by a special name—'Flake,' and day after day consumers came [to Mr. Beazor's fish stores] and purchased it. Now I mention Dog-fish, I might say that of the large quantities landed at the fish wharf I only observed two examples of the Spotted Dog.

"Another 'undesirable' turned up in large numbers this year in this locality—the 'Horse-mackerel' or 'Shad' [really, the Scad]. At one time thousands have gone into the wharfmen's refuse-barrow for manure, as no one would purchase them. This last season it was discovered that they were, after all, a most nutritious edible fish.

"I am glad to record a somewhat successful autumn Herring-Fishing. Of course, the numbers of boats employed were small in comparison with other years, the Admiralty making increasing demands for them, so, considering the smaller fleet and the quantities landed, it must be esteemed a successful fishing. From the enormous prices realised, both boat-owners and crews have made a grand 'harvest of the sea.' I had four large Anchovies brought me which were meshed in the herring-nets. The fishermen express astonishment on seeing them."

NOTES ON AN AUGUST NIGHTINGALE.

By O. V. Aplin.

About the middle of August we had a Nightingale for several days in the shrubbery of mixed trees and shrubs I planted a few years ago in front of the house, which is now much haunted by birds. But I never had a Nightingale here before, and its appearance is the more remarkable since this bird is usually rare round here (Bloxham, Oxon.). I had not noticed one in the parish during the spring, although there were two (or three) just on the outskirts—at the Highlands, Tadmarton—on a different sub-soil, or rock rather. Why the Nightingale should be so scarce here, as a rule, it is difficult to say. Possibly the light, red land, overlaying ironstone, does not suit the plants on which some favourite grub of the Nightingale feeds. It was remarked long ago by John Walcott that "it has been observed to be met with only where the *Cowslip* grows kindly" ('Synopsis of British Birds,' vol. ii). And it is a fact that there are very few Cowslips about here. They do not thrive in the red land. Directly you get down Edgehill, on to miserable, poor, stiff, or heavy land, you find Cowslips and Nightingales. The stiff land about Deddington, too, seems to harbour more Nightingales than we have. These remarks about light and stiff lands and Nightingales have, of course, only a purely local bearing.

Our August visitor made its presence known at first by the frog-like, grating cry. It often uttered this, and also occasionally the alarm note, *wit*, in a rather shrill tone. It was very shy, and as the growth is thick I only caught a short sight of the bird very occasionally. But it used to come beyond the new shrubbery into some shrubs only three or four yards from the house; and one morning while we were at breakfast we could hear it croaking close to us, and saw it once. The most interesting point about this visit is that the bird actually sang. This was very noticeable in the forenoon of the 15th, a warm and rather damp morning with both rain and sun. It did not sing the full spring song, of course. There was no high *pipe* and no *jug*; but merely the irregular notes which are interspersed among those finer ones, and are very largely used by indifferent singers. But though the notes were few, there was no mistaking their richness, power, and volume; no other bird in England has a voice of the same quality. And anyone who knew the Nightingale's song would have recognised the notes at once, and could have identified the bird by them. These little runs of notes were sometimes interrupted by the frog-like croak. The "song" which this individual bird used was somewhat of the same character as that which we sometimes hear from Blackcaps and Garden Warblers late in the summer. These birds do not sing their full song, or, indeed, more than a few notes, at that season. They do not sing the autumn song—here, at all events. But Mr. Tait, writing of the Blackcap in Portugal, where it is resident, says its song may be heard all through the year except in November, December, and January, being more vigorous in spring and fainter in July and August, during which months the bird moults. From this I gather that it sings there the autumn song, in September and October (*vide* 'Ibis,' 1887, p. 91). The Willow-Wren sings fairly well in early autumn (*i. e.*, the bird's autumn), and the Chiffchaff gets his full song in September generally. But I only put these efforts of my Nightingale on a footing with the performances of the Blackcap and Garden Warbler, occasionally heard at the end of summer.

One sees and hears very little of the Nightingale after it has ceased singing; or, at all events, after it has reared its young. I only remember once before seeing a Nightingale in August, and that was on the 12th in 1894, when walking with Mr. Howard Saunders on Foxcomb Hill, near Oxford, but in Berkshire; and I should like to know if anyone, who lives where Nightingales are common, has heard these birds singing even a few notes in the late summer.

The near relationship of the Nightingale to the crepuscular Robin suggests the possibility of the former singing in its winter quarters. But this is unlikely, unless there is some district where the Nightingale *as a species* is found all the year round—though the individuals inhabiting it may not be the same all through the year. And I do not think such a place exists. Birds do not seem to sing in their winter quarters when those quarters are not regularly inhabited in the breeding season by any individuals of the same species. Robins were not singing in the oases near the Gulf of Gabes in January and February. Nor were Willow-Wrens and Chiffchaffs in Southern Tunis in March (*e. g.*, the 14th). On the other hand, the Black Redstart, another near relation of the Nightingale, sings in autumn and early winter in those countries where it is resident, as a species at all events. I heard a good many singing in October (9th–13th) in the Belgian Ardennes, where it seemed to be going to pass the winter. Mr. Howard Saunders told me he had heard it in Spain in November; and Mr. W. C. Tait writes that in Portugal, where it breeds, it begins to sing from the middle to the end of February, and continues till the end of June. After the autumn moult it recommences its song in September, and goes on till nearly the end of December ('Ibis,' 1887, p. 88). But though the Black Redstart (a non-breeder here) winters in parts of England, it does not seem to sing here. The late Mr. Gatcombe constantly reported seeing it near Plymouth, but I do not remember his ever saying anything about it singing.

Since writing the above notes I have read ('British Birds,' vol. ix, p. 185) an account of a pair of Black Redstarts in Dorsetshire, the male of which uttered a "faint but pleasing warble" on a warm sunny day in the latter part of February. The description, however, does not suggest the full song of this bird. Redwings often sing some sweet twittering notes before they leave us in spring, which are mistaken for the Redwing's full song by those who are not personally acquainted with it. It is to be noted that the Redwing has several times been reported to have nested in this country.

NOTE ON THE OCCURRENCE OF *HETEROTANAIS OERSTEDI* AND OTHER ISOPODS IN CHRISTCHURCH HARBOUR, HANTS.

By J. and W. Omer-Cooper.

In the course of collecting along the shore of Christchurch Harbour, Hants, in May last, large numbers of small Isopods belonging to the aberrant group Chelifera were found among the mud and algæ on the upper surface of submerged stones. Upon microscopical examination these proved to be *Heterotanais Oerstedi* (Kroyer), a species beautifully described and figured by Prof. G. O. Sars in his 'Crustacea of Norway,' vol. ii, p. 14, Pl. VI. The Rev. T. R. R. Stebbing, F.R.S., and Dr. W. T. Calman very kindly confirmed this identification, and stated that they knew of no record of *H. Oerstedi* from the British Isles, the species having been hitherto recorded from the shores of Continental Europe only. This species is of considerable interest on account of the large size and peculiar structure of the chelæ in the male, which are described by Prof. Sars as follows: "Of enormous size, carpus very large and produced in front, outside the hand, to a lamellar lobe, hand imperfectly chelate, the thumb being transformed into a thin, reflexed lappet instricted at the base."

In the same parts of the Harbour in which *Heterotanais* occurs, two other interesting Isopods are to be found in large numbers. The first of these is *Cyathura carinata* (Kroyer)—a species closely related to the well-known *Anthura gracilis* (Mont.), from which it differs in its large size and in several conspicuous anatomical details, chief among which is the absence of the secondary sexual characters seen in the male *Anthura*. This Isopod is to be found in considerable abundance under stones and burrowing in the mud; its movements are slow, and it frequently leaves the abdomen exposed above the surface of the mud for breathing purposes. It has only been once previously recorded from the British Isles (from East Norfolk, by Mr. R. Gurney in 1907), but the species is well known on account of the work done on its anatomy by various German scientists—notably the account of the statocysts in the tail of this species (under the name of *Anthura gracilis*) by Prof. Thienemann. The structure of the sexual stilet of the second pair of pleopods in the male of *Cyathura* is especially peculiar and interesting, but no description of this appears to have been published.

The third noteworthy species of Isopod occurring in this locality is *Paragnathia Halidaii* (Bate and Westwood), previously recorded by Mr. A. H. Haliday from Strangford Loch in 1847. Since this species was taken at Christchurch it has been found near Plymouth on June 10th and August 18th by Mr. J. H. Keys, F.E.S., while collecting shore insects for the catalogue of the Marine Biological Laboratory, and given for examination to the Rev. Father Morford, who has also examined specimens taken by Mr. Keys some twenty years ago in the same neighbourhood. Dr. W. T. Calman also has a praniza taken at or near St. Andrews in 1898, which would seem to belong to *P. Halidaii*. This species is of the greatest interest on account of its anatomy, which appears to be of sufficient peculiarity to be the grounds for its removal from the genus *Gnathia* and the formation of the new genus *Paragnathia* to receive it. *P. Halidaii* is, in the adult stage, almost terrestrial in habits, and is to be found living in small cavities in the banks; the males apparently form small holes leading from these, into which they retire in case of danger. The pranizas, like those of other Gnathiidæ, are parasitic on fish.

It is worthy of note that the water in Christchurch Harbour is brackish, and that the species mentioned above are not truly marine, but are found in places where fresh water is mixed with the salt.

SOME BIRD-NOTES FROM SOMERSET COAST.

By Stanley Lewis.

On July 21st I visited Brean Down, that nose-like piece of the Somerset coast which juts out for about two miles into the Bristol Channel at Uphill, two miles south of Weston-super-Mare: the River Axe, after running its course from the caves of Wookey Hole, near Wells, where it first emerges from its subterranean passages of the Mendip Hills, here empties itself into the sea on the northern side of the Down, thus preventing it being reached on foot from Weston, which, however, can be done on coming up the coast-line in the opposite direction from Burnham, but a ferryman is usually at hand, and for threepence rows you the few yards over.

The Royal Society for the Protection of Birds keeps a watcher here, but owing to the war, I think the resident farmer's son, Mr. Edgar Hawkins, keeps a good look-out for anyone taking eggs or killing or taking birds.

Ravens have nested here for many years, and this season four young ones were hatched out, but unfortunately one flew into the tide and was drowned, so that three only got safely off; the Peregrines also hatched off safely with a complement of three: both species nest in a very precipitous part of the cliffs facing the sea near the fort, and although it would seem almost impossible to get to the eyries, this feat before now has been accomplished.

Kestrels had young in the cliffs; their cries could be heard at feeding-times, when the old bird could be seen to rise over the headland and skim back close down on the bracken.

By far the commonest bird on the Down was the Wheatear. This species was everywhere. At one spot where the nettles and ragwort grew together, a pair of birds were very noisy. I soon located four youngsters, hardly able to fly; these were no doubt a second brood, and the cause of all the bother.

Meadow-Pipits were common, and Linnets were in evidence. Three young Carrion-Crows were hopping after each other as they ascended the southern slope of the Down, and high overhead Swifts circled, their mates no doubt in the fissures enjoying the safety which the cliffs gave them.

Sea holly was growing in places and the prostrate stems of the musky heron's-bill put forth their small flowers amongst the grass.

A Pied Wagtail proved very confiding, and was a welcome visitor as we rested for refreshment in the warm, shingly bay; it stumbled and ran over and between the stones, artfully getting nearer to the crumbs thrown out as an inducement for its company. At first the tempting morsel was snatched and taken off on the wing to be devoured somewhere out of sight, but very soon the bird picked them up from within two yards of my feet, and, running a yard or so more, swallowed them. When enough had been eaten, it thoroughly cleaned itself, wing and tail feathers were carefully preened as it perched upon a stone quite near, and finally it flew away overhead on to the Down.

Two Green Sandpipers were very active, and quickly worked themselves out of sight down the river bank, and Song-Thrushes and Missel-Thrushes were feeding on the flat, intersected land lying between the river and the farmhouse.

The Sheld-Duck is resident and common, nesting principally on the southern side and choosing the shelter of the low bushes and heather, so my informant told me, for nesting purposes, rather than the rabbit-burrows. I think this habit must be partly owing to the protection given them, for, on the sand-dunes not far away, where the birds are numerous and people are more frequent, a nest is seldom found outside a burrow.

In the estuary of the Axe is a tiny rocky prominence known as Black Rock, so called from its sombre hue, and when the tide is in the main portion becomes an island with a rugged growth of grass on the top. On this islet were resting in various attitudes Sheld-Ducks of all growths, from a few days old to half-grown individuals, with old birds here and there. Lower down on the seaweed near the water were forty-seven Oystercatchers, some sitting and stretching, others standing sentinel-like, but all with a melancholy aspect, waiting for the ebbing of the tide and the approach of feeding-time.

Nine young Sheld-Ducks left the rock and swam out to seaward; one old bird led the way, and the other, the female apparently, brought up the rear. In the brilliant sunshine they looked lovely; the ducklings resembled little balls of down tossed to and fro on the gentle waves. About twenty more almost half-grown began to swim from the island in charge of two old ducks, and it was surprising how fast these ducklings could swim against the tide.

As the tide went out, several hundreds of Black-headed Gulls, immature and adult, arrived and stood thickly along the shore, moving slowly as the tide ebbed. Feeding with them were a few Herring-Gulls and Kittiwakes, with the Oystercatchers at varying distances from each other as far as the eye could see them.

I distinctly heard the "purre" of the Dunlin, but did not see one. A small party of Ringed Plovers came up the shore, and quickly turning flew outwards to the receding tide. Oystercatchers and Ringed Plovers nest along the shore, and it is quite probable that the Manx Shearwater will some day be included in the breeding birds of Somerset, considering that there are several stations on the west coast from Scilly to the smaller island of St. Tudwals, off Carnarvon.

OBSERVATIONS ON THE BEHAVIOUR OF A NESTLING CUCKOO.

By E. P. Butterfield.

On June 11th last a friend of mine who was on his holidays from Tunstall, Staffs, took me to the nest of a Titlark which contained three eggs and a Cuckoo's egg, which he had found on the afternoon of June 9th on Baildon Moor, an extensive piece of waste ground, which was leased some time ago to the City of Bradford for the use of the public. The day was brilliantly fine when we arrived at the nest, which was about noon, and we found that all the eggs were hatched—three Pipits and one Cuckoo. It is impossible to say how old the nestlings were, but they could not have been two days old, as may be inferred from the above remarks. The Cuckoo seemed to have been hatched a little longer than the Pipits, but still it could not have been much more than twenty-four hours old, as it was quite flesh-coloured, and a young Cuckoo begins to get much darker after this age.

The Cuckoo, even at this age, manifested some restlessness, and wriggled about a little when any of the rightful owners pressed on its back, but still showed no further disposition to eject its fosterer's young. I suggested to my friend a walk round Hope Hill, the highest hill in the neighbourhood, and afterwards a return to the nest. On our return, to our astonishment, we found that one nestling had been thrown out of the nest and was lying on the rim, and we had not long to wait before the Cuckoo threw out the other two Pipits. The method of ejectment was as follows: The young Cuckoo instinctively works its way to the bottom of the nest, where it evinces great restlessness until one of the nestlings rests its head on its back. This induces the Cuckoo to lower its body, and by degrees it is enabled to get the nestling into the hollow of its back; then it commences to walk backwards up the side of the nest, keeping its victim in position by its wings, which it uses with remarkable facility, until it reaches the top of the nest, when, by an extraordinary effort, it throws its victim from its back, after which operation it remains flapping its wings for several seconds, as if to make assurance doubly sure that the process of ejectment has been successful, and then lowers itself and plunges itself into the nest.

In the act of hoisting its victim to the top of the nest the Cuckoo is a most fiendish-looking object; its head, at the end of an extraordinary long neck, is hanging down the side of the nest, of a livid colour, and "didders and dodders" in a most remarkable fashion, and the whole frame seems in a very tense condition. Indeed, after I had witnessed the ejectment of the Pipits, I expressed to my young friend from Tunstall my conviction that the phenomenon was one of the most marvellous sights in Nature. We stayed about the moor during most of the afternoon of June 11th, leaving the nest for an hour or so at a time, and on our return to it we invariably found one or more of the Pipits on the rim. The old bird never showed the slightest disposition to help its own young back again. Once on my return I flushed the mother—at least, I presumed it to be the mother—when I could not be more than three to six feet from the nest, and by the time I arrived the Cuckoo was just on the point of throwing out one of the Pipits. I could hardly have believed this if I had not had ocular demonstration of the fact. The day was warm and I had a supply of dipterous larvæ, which both the Cuckoo and Pipits ate with avidity, so the young birds did not at all suffer any inconvenience from our repeated visits. There were an abundance of adult Cuckoos in the immediate neighbourhood, but not an individual showed any interest whatever, or came very near the nest in question during the whole of the afternoon.

On June 12th my friend and I visited the nest again, arriving at about 7 a.m., and found all the three Pipits thrown out of the nest, but all were alive. One, however, died shortly after. Mr. Parkin, whom we found at the nest, brought a Pipit's egg from a nest he had found, which he introduced into the nest containing the young Cuckoo, but it was not long before the Cuckoo ejected the strange egg. Then he introduced a young Whinchat from a nest near by, and, perhaps, four days' old; the Cuckoo soon made two attempts to throw it out, but failed both times, as the Whinchat was not properly balanced on its back. It seemed evident that it was going to be a tough business for the Cuckoo to throw the Whinchat out. We left the nest for some time—perhaps for the better part of an hour—and found, on our return, that the Whinchat had been thrown out. We stayed about the nest for some time before it made another attempt to eject the Whinchat when replaced, and it again failed in its attempt.

June 13th.—Again visited the nest on Baildon Moor by way of Stony Ridge, arriving at nest at 12.30 p.m.; met Mr. Parkin on Saltaire Bridge, who told me he had just come from the nest, and witnessed the ejection of the only Pipit left and the operation of the ejection of the Pipit's egg, both of which he had replaced in the nest. On my arrival the young Pipit was lying on the rim of the nest; the egg, however, was still in the nest. I replaced the Pipit in the nest, but the Cuckoo showed no disposition to eject it for some time. Then I put the young Pipit on to the back of the Cuckoo, but it made no attempt to eject it, but jerked it from its back with a certain degree of irritability. This I repeated several times with the same results. When I placed the egg on its back, the Cuckoo showed no disposition to eject it. I may here state that the weather at this time was quite dull and much colder than yesterday; this, I thought, to some extent might account for the Cuckoo's inaction. However, I left the nest, and fetched one of the young Whinchats, and on my return to the nest the day was quite sunny. In the meantime the Pipit had again been thrown out, but the egg was still in the nest. I introduced the young Whinchat, when the Cuckoo at once began to show signs of restlessness, and not many minutes elapsed before it had the Whinchat well balanced on its back, and was climbing up the side of the nest. I surmised that the operation was going to be successful, so I immediately began to flatten out the area round the rim of the nest. This I did in order to ascertain whether I could induce the Cuckoo, after having thrown the Whinchat from its back, to push it still further from the nest than it had hitherto done. The Whinchat, having been heaved to the top of the nest and thrown out, the Cuckoo, as usual, kept flapping its wings. At this stage I placed the Whinchat against the Cuckoo, when, with great vigour, it began to press the Whinchat further away from the rim of the nest.

This I repeated several times, until the Cuckoo had pushed the Whinchat at least three inches from the rim of the nest. I naturally wondered whether the Cuckoo would find its way back into the nest. This it did, by stretching out its neck to its utmost limit, which is saying a deal, towards the nest, accompanied by two or three steps forward, and then fell rather clumsily into the nest. Mr. Parkin asked me whether I had seen the Cuckoo void any excreta, as information had been given him which seemed to negative this idea. However, to-day I saw the Cuckoo twice within a few hours part with fæces, but not in such large quantities as were voided by the young Whinchat. I left the nest to go to one of my sons, who resides near Keighley. On my way I called to see a friend who lives at Morton, and, being interested in birds, he mentioned a friend who took the photo of the nest of the Ring-Ousel containing a young Cuckoo, reported by me in the 'Zoologist' for 1913, p. 391, after which I told him I had only recently left the nest of a Titlark containing a young Cuckoo. He expressed a strong wish that I would show his friend the nest, since he very badly wanted a photo of a young Cuckoo—a request I could not deny; so, instead of seeing my son, I was soon on my way back to Baildon Moor. On our way my friend showed me the nest of a Missel-Thrush, built in a very unusual situation—nearly on the top of an exposed wall, near the caretaker's house, at a reservoir.

On June 14th I went with one of my sons to the nest of the Titlark, and we found both the Pipit and egg outside the nest. On putting the young Whinchat into the nest once more, the Cuckoo did not manifest such a keen desire to hoist it from the nest, but on pressing the Whinchat against the Cuckoo, the latter heaved the Whinchat to the top of the nest, and, by repeating the finesse adopted the previous day, I induced the Cuckoo to push back the Whinchat three or four inches from the rim of the nest. On visiting the nest again some time later the Cuckoo could not be induced to throw out the Whinchat. The desire for exclusive possession of the nest was becoming gradually weaker. The last of the three Pipits I found quite dead to-day, it having lived about four days. It could not, however, have lived this length of time except by artificial means; it must have been replaced in the nest at least twenty times, and then the weather was bright and warm at the time; and there is every reason to believe that the parents used to feed the young even when it was thrown out.

June 16*th*.—Took my wife and a daughter to see the young Cuckoo. The hollow in its back is rapidly disappearing, and when I introduced the Whinchat into the nest I could not coax the Cuckoo to throw it out. Cuckoos to-day are falling off in their song.

June 18*th*.—Visited the nest with Mr. Priestley, of Bradford, who wanted a photo of the Cuckoo. This is getting now quite a fine fellow; his tail and bastard-wing are feathering very nicely, but the back is yet almost as destitute of feathers as when newly hatched.

My friend had great difficulty in securing a photo on account of the Cuckoo keeping its mouth open, partially opening and closing its lower mandible at the same time. When I touched its body it showed great irritability, and displayed great pugnacity when my hand was placed near the nest; it puffed out its neck-feathers, erected feathers on its head, hissed almost like a serpent, raised itself up, and stepped back in the nest—this latter movement in order to increase its momentum in its attack. Any object placed on its back it tried to throw off with violence, and once I heard for the first time its call-note.

June 19*th*.—Again visited the nest in the morning and put the young Whinchat in, but the Cuckoo made no attempt whatever to throw it out. I left home on this date for Grange-over-Sands.

On writing from Grange to one of my daughters, asking if she would see if the young Cuckoo were still in the nest, she replied that it was, and was more pugnacious than ever; when she went near the nest it opened its mouth so widely that it reminded her "of the opening of a tin of salmon."

On June 23rd she informed me the Cuckoo was not in the nest, so probably someone had taken it away. It could not have been fully fledged at this age—about thirteen days. I had met a person with two dogs on June 13th, and one dog was evidently trained for finding birds' nests; and he asked at the time if I knew of any nest containing an egg or young of the

Cuckoo. He said it was some time since he found the last young Cuckoo, near where we were standing.

The last time I heard the Cuckoo's call was on June 19th. I did not hear it once at Grange from June 19th to the 26th. I spent a good deal of time on Baildon Moor during the week ending June 19th, and found many nests, with eggs, of species which are victimised by the Cuckoo, but did not find another Cuckoo's egg, although Cuckoos abounded in the immediate district; which is strange, if the Cuckoo lays as many eggs as it is reputed to do by some authorities.

NOTES AND QUERIES.

AVES.

"An Unknown Warbler in Oxfordshire."—I have lately been reminded of the strange experience which I recorded in the article named above ('Zoologist,' 1903, p. 343) by reading Mr. H. Eliot Howard's 'British Warblers,' and especially his account of the Garden-Warbler. The mystery of the unknown Warbler has never been solved; but I have for some time had a strong opinion about it, and in the light of Mr. Howard's researches the story is worth a momentary revival.

The peculiarity of the bird was the song, which was utterly strange to all who heard it. It was a sweet, continuous, liquid gurgle, interrupted now and again by notes, usually three in number, of a more distinctly musical type, which have a certain mellow but reedy tone, not unlike some of the notes of the Redstart. The bird was carefully watched for three successive years in a wood some four miles from Oxford: in 1901 by Mr. W. S. Medlicott and a friend, in 1902 by the same good observer and nest-finder, who introduced me to it on June 10th of that year, and in 1903 by myself and several younger friends, all of them keen on finding a nest. But no nest was ever found that could be attributed to it in any of these three seasons.

The appearance of the bird, so far as we could see it in the rather dense foliage, was on the whole that of a Garden-Warbler, though the song seemed to forbid the identification. Nevertheless, I am now pretty well convinced that it was an eccentric member of this species, and for the benefit of future explorers of the 'Zoologist' I wish to give my reasons for this conclusion.

1. In listening carefully to the song of Garden-Warblers I have often heard something very like the notes, usually three in number, on which I laid stress in the extract given above, and have been instantly reminded of the mystery. Thus I have come to believe that the bird was a Garden-Warbler with an abnormal or deformed voice organ.

2. Assuming the song to have been an abnormal one, we have an explanation of the strange fact that, so far as we could see, the bird had no mate, and for the other curious fact that no nest was found in the course of three seasons, in spite of constant searching by experienced nest-finders. Could a female Garden-Warbler be expected to take up with a male who had nothing better to offer her in the way of song than this extraordinary performance?

3. The time of arrival, the second week in May, suits the Garden-Warbler better than any other bird which it is likely to have been.

4. Its use of its "territory" was quite in the manner of the Garden-Warbler as described by Mr. Howard. It wandered about the trees in an area of some two acres in extent, and specially affected one particular tree, an oak overhanging a small pond.

5. Its favourite food seemed to be green caterpillars—a characteristic preference, I believe, of the Garden-Warbler.

Thus I am now pretty well convinced as to its identity. But in any case, there is a very interesting feature in the story. For three successive years an individual bird returned to the same wood, taking possession of the same territory, and holding it during the season. This is made absolutely certain by the abnormal and unique song. And during those three seasons a number of good nest-finders utterly failed to discover a nest, which shows how pathetically persistent were the efforts of this unlucky bachelor to secure a mate who never came.—W. Warde Fowler.

Rough-legged Buzzards in Suffolk and Norfolk.—The two Rough-legged Buzzards, of which Mr. Rope had so favourable a view ('Zool.,' 1915, p. 466), would seem to have been one contingent of a migration of this autumn visitant, as two were also shot in the north of Suffolk on November 4th and 20th, 1915. These were forwarded to Mr. Saunders and Mr. Gunn, from whom I heard of them, as well as of others, in Norfolk. The first to come to Norfolk were two seen by Mr. J. Vincent, passing over a large Broad as early as September 27th. Being carefully protected, they continued to frequent the same neighbourhood until December, and up to the 16th of that month had been seen by him practically every day. During October and November, Buzzards, which are believed to have been all of the Rough-legged species, were seen or shot in various parishes as far apart as Breydon, Ormesby, Rollesby, Filby, Heydon, Hanworth, Northrepps, Hempstead, Long-Stratton, Snettisham, and Mundford, and one near Norwich. Possibly, however, some were counted twice over.—J. H. Gurney (Keswick Hall, Norwich).

Hornbill's Procedure in Bathing.—I recently watched an African Hornbill (*Ceratogymna atrata*) bathing at the Zoo in one of the small basins (about a yard across) in the Eastern Aviary. The bird repeatedly flew across this, dragging its tail and belly through the water, and, on landing, flapped several feet along the ground like a wounded bird. After a dozen or more repetitions of this, its plumage was so draggled that it had to scramble up the wires to get on a perch. What I should like to know is—Does this mean that in nature this species plunges into deep water and flaps along the surface instead of bathing in the shallows, as land-birds usually do? The habit seemed to me a very risky one, but maybe the birds know safe bathing-places. —F. Finn.

Display of Wilson's Bird of Paradise.—On a Sunday in late autumn last, although the weather was dull, some Birds of Paradise were displaying well at the Zoo, and in particular I noticed the "show" of *Schlegelia wilsoni*, which was new to me. After hopping about actively in a horizontal pose, he drew himself up and bent down his neck, fully displaying his bald blue head and yellow tippet. Then he turned round and held his head up straight, equally well displaying these beauties and also the crimson back; again turning, still with the head up, he displayed his dark-green breast, thus fully exhibiting the variety of rich colours, in which this species excels all the others. The hen took no apparent notice.—F. Finn.

MOLLUSCA.

Catalogue of Sussex Mollusca.—My attention has been recently directed to three papers, of which I was unaware when compiling the catalogue of Sussex Land and Freshwater Mollusca ('Zool.,' 1915).

(1) By Messrs. Santer Kennard and A. W. Stelfox, "On the Occurrence in England of *Valvata macrostoma* (Steenbuch)," read at a meeting of the Malacological Society on March 11th, 1910 (see 'Proceedings,' vol. ix, Part II, June, 1910, p. 123). It records that Mr. Stelfox found this species in the Pevensey Marshes in 1909.

(2) By A. W. Stelfox on "The Occurrence of *Helicella heripensis* (Mabille) in Great Britain," read at a meeting of the Malacological Society on January 12th, 1912 (see 'Proceedings,' vol. x, Part I, March, 1912). It records the finding of this species by the author at the Devil's Dyke, and near Duncton in 1908, and at Lewes in 1911.

(3) By A. W. Stelfox, "Notes on some British Non-marine Mollusca," read at the Malacological Society on the same day as the preceding. It records that the late Mr. P. Rufford first collected *Planorbis vorticulus*, in a recent state, in Pevensey Level in 1908; that Mr. Stelfox found *Valvata macrostoma* in the marshes near Stoneham Farm, east of Lewes in 1911, and also *Paludestrina confusa* in a tributary of the Arun, at Bury (a hamlet near Amberley Station) in 1908, and again in 1911.

The last paper contains a most excellent photograph, by Mr. R. Welch, of all the species above mentioned, with others.

I much regret the unfortunate omission of these records from the catalogue.—E. W. Swanton (Educational Museum, Haslemere).

Slipper-Limpet in Essex.—Mr. G. C. Robson ("On the Extension of the Range of the American Slipper-Limpet on the East Coast of England," 'Ann. and Mag. Nat. Hist.,' pp. 496–499, 8th Ser., vol. xvi, December, 1915) has recently drawn attention to the spreading of the Slipper-Limpet (*Crepidula fornicata*) on certain portions of the coast. It will therefore be of interest to point out that whilst on a dredging expedition at Walton-on-the-Naze, Essex, on October 27th, 1915, I obtained four living examples of this mollusc, two of which, attached to an empty shell of a Whelk, are at present (January 12th) to be seen in one of the public aquaria of the Horniman Museum at Forest Hill. The Slipper-Limpets were all obtained at one place, about a mile and a half down the irregular arm of the sea which extends from the old mill at Walton towards the open water. I have spent several days at different times of the year in dredging at Walton, but had never before obtained the Slipper-Limpet. The boatman informed me, when I drew his attention to the molluscs, that he was already aware that Slipper-Limpets were to be found in the neighbourhood.—H. N. Milligan.

ANTHOZOA.

Sagartia parasitica Mounting on Shells.—On the afternoon of October 22nd, a small so-called Parasitic Sea-Anemone (*Sagartia parasitica*), of about half an inch in length, was dropped into an aquarium. It fell close to a small Hermit-Crab (*Eupagurus bernhardus*) enclosed in a *Nassa* shell. A few seconds later it so happened that the Hermit-Crab dragged its shell past the Sea-Anemone, and the latter adhered to the pointed end of the *Nassa* shell by means of its disc and tentacles, and it was dragged behind the crustacean. The Sea-Anemone quickly bent its column, in a way which was suggestive of the action of a looping caterpillar, so that it was able to press a portion of its base on the shell, and by this part of its base it adhered. The disc now released its hold of the shell; the remainder of the base was pressed on the shell; and then the column of the Sea-Anemone was raised so that it stood obliquely out from the shell in the characteristic manner of this cœlenterate. This process occupied not more than five minutes, though I neglected to note the exact time taken. In order to observe whether the Sea-Anemone would repeat the action, I removed it from the shell, placed it on the floor of the tank, and then pushed the Hermit-Crab and shell towards the cœlenterate. The latter turned its disc towards the shell, but unfortunately the Hermit-Crab at that moment scuttled away. I then placed an empty whelk-shell, of about two and a half inches in length, against the *Sagartia* in such a way that the point of the cone almost touched the Sea-Anemone. The latter proceeded to mount on the point of the shell, again fastening itself first by its disc, and then affixing its base. In this case the time occupied was taken by the watch. The whole process, from the moment of placing the shell to the time when the *Sagartia* stretched its column up from the shell, occupied ten and a half minutes.—H. N. Milligan.

EDITORIAL NOTES.

Mr. G. Bathurst Hony writes from 4, Beaufort Road, Clifton, Bristol: "As I am working at the Natural History of Wiltshire, I should be greatly obliged if your readers would send me any information they can on the distribution, etc., of fishes, reptiles, and amphibians in the county. Any other notes on the natural history would be welcome."

No doubt many of our readers will be able to oblige, but, as we remarked on a similar occasion a year ago, it would be as well to send such notes to the 'Zoologist,' such copy being always required, while the publication of an observation is likely to result in the acquisition of further evidence.

We should also like to draw attention to the recent amalgamation of our publishers with Messrs. Adlard and Son, of Bartholomew Close. Messrs. Adlard are an even older firm than West, Newman & Co., dating back 150 years, and we feel confident that, with the added benefit of their valuable experience and, we hope, an increased support from subscribers, the 'Zoologist' will attain an importance beyond anything in its past. In this confidence we wish our subscribers and contributors a prosperous New Year.

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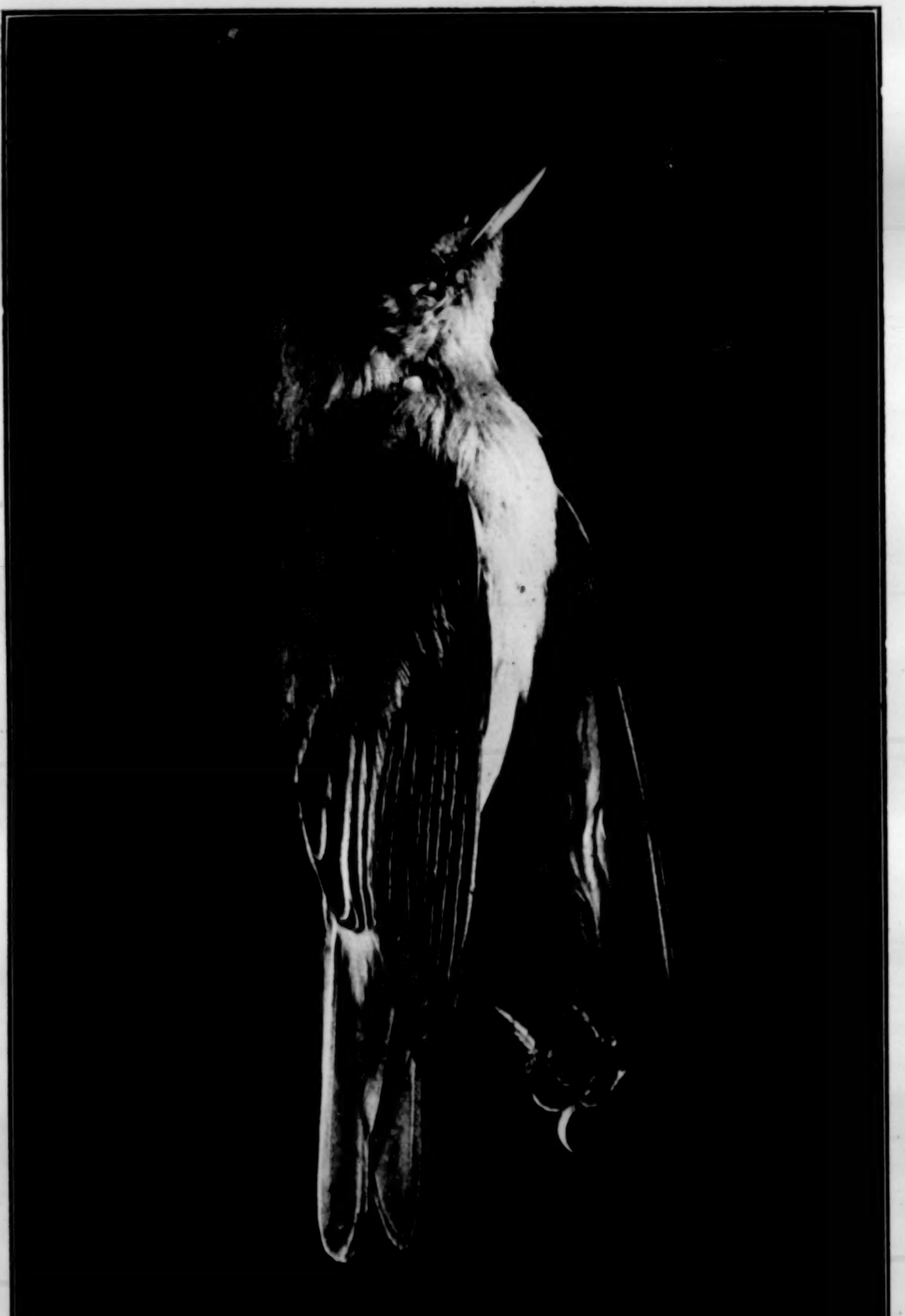

ICTERINE WARBLER FROM TUSKAR ROCK.

Photograph of the Bird in the Flesh after it was removed from the Spirit and its Feathers dried. About One-seventh larger than Natural Size.

Photo by C. J. Patten.